



The Secretary of Energy
Washington, D.C. 20585

February 4, 2008

The Honorable Jeff Bingaman
Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

Thank you for your December 20, 2007, letter regarding the fiscal year (FY) 2008 appropriations for the Department of Energy's (DOE) research and development missions. I am concerned about the funding levels provided to support DOE's scientific research missions, and I am particularly concerned about the levels provided to the Office of Science. The cuts made to the Administration's FY 2007 and FY 2008 funding requests will have real consequences at many of our National Laboratories; some of those consequences are outlined in the points below. In addition, the diminished opportunity for research funding will be felt at more than 300 public and private research universities supported by the Office of Science across the country.

As you are aware, in 2006 President Bush proposed the American Competitiveness Initiative and in 2007 the Congress passed and the President signed into law the America COMPETES Act. The goal of both is to double funding for basic research in the physical sciences over the next decade, and both have enjoyed substantial bipartisan support. I would like to thank you for your active and effective partnership with the Department to help secure our country's scientific future.

To meet our national objectives for scientific leadership for energy, environment, and economic competitiveness, annual appropriations for basic research in the physical sciences would have to increase roughly an average of seven percent per year, with more substantial increases at the front-end and more modest increases in the later years. Both the House and Senate Appropriations Committees passed initial FY 2007 and FY 2008 funding measures that would have provided substantial funding increases; however, in both years those critical increases did not materialize in the final enacted appropriations.

Nearly flat appropriations levels mean that we must forego important new and upgraded facilities and hold back on promising avenues of research; appropriations growth below the rate of inflation will mean a reduction in the number of scientists and amount of basic research the Department can support. Science is a very competitive and dynamic enterprise – lost funding means lost opportunities for breakthroughs and discoveries that would give the U.S. a competitive advantage in the global economy and perhaps bring us greater energy security.



The current levels of funding will mean scaling back efforts across the spectrum of use-inspired basic energy sciences; ceding to Europe our global leadership in high energy physics; hindering the Department's ability to meet our international commitment to Japan, China, South Korea, India, Russia, and the European Union to cooperate in a large-scale fusion experiment known as the International Thermonuclear Experimental Reactor (ITER); directly eliminating hundreds of research jobs at National Laboratories in 2008; and reducing research opportunities for the best and brightest at universities across this Nation.

Below is a summary of the direct and immediate effects that we expect to see in basic research at the major laboratories:

- **Overall**

The Department estimates that about 625 existing scientist, student, and technical staff positions will be negatively impacted in various labs and disciplines across the country. Approximately 100 reductions are planned to take place in FY 2008 with the remaining 525 as a result of the reduction to the FY 2008 enacted appropriation. Layoffs will occur in areas funded by the Basic Energy Sciences, High Energy Physics, and Nuclear Physics programs in the Office of Science (SC). The total decrease in employment will be less than this, because there will be increases in employment in other areas, such as in those supported by the Office of Science's Biological and Environmental Research and Advanced Scientific Computing Research programs. SC-wide, the net impact to overall scientific employment levels under the FY 2008 appropriation is a reduction of about 224 positions. Please see the attached table for an overview of where the layoffs described below are projected to take place. The effect is most pronounced in the following programs, in which existing researchers will be laid off and planned opportunities for new researchers will be terminated:

- **Fusion Energy Sciences:** Fusion occurs when forms of the lightest atom, hydrogen, combine to make helium in a very hot (100 million degree centigrade) ionized gas, or plasma. A small amount of matter involved in the reaction is converted to a large amount of energy. When developed, fusion will provide a virtually inexhaustible, safe, environmentally benign, and affordable energy source. In FY 2008:
 - No funding was provided for ITER construction; the U.S. will lose credibility as a partner in large-scale international research projects.
 - The U.S. ITER project has been forced into a survival mode, using existing prior year funds to maintain a minimal core team.
- **Basic Energy Sciences:** Fundamental chemical and materials research may lead to methods to split water with sunlight for hydrogen production; technologies for harvesting solar energy with greater power efficiency and lower costs; super-strong lightweight materials to improve efficiency of vehicles; "smart materials"

that respond dynamically to their environment; and low-cost fuel cells, batteries, supercapacitors, and thermoelectronics. In FY 2008:

- Approximately 50 existing, permanent PhDs, 30 postdoctoral fellows, 20 students, and 10 operations, support and other personnel will be lost from on-going research programs in basic energy sciences, whereas, at the FY 2008 request level funding in this program would have allowed substantial hiring, including about 400 new permanent PhDs, 120 additional postdoctoral fellows, and 240 more students.
 - Of the basic energy sciences facilities not terminated entirely, BES facilities will be operated at only 80 percent of maximum available hours. By comparison, these facilities were able to deliver 95 percent of their maximum available hours in FY 2007.
 - No funding was provided for any new basic energy sciences research initiatives in the use-inspired energy research areas such as advanced materials for solar power, hydrogen storage, carbon sequestration, or electrical energy storage underpinning the scalability of renewable sources of energy such as wind and solar. More than 700 proposals from laboratories and universities across the country, already peer reviewed, have been cancelled.
- **High Energy Physics and Nuclear Physics:** The Department coordinates these programs that seek to develop the far-reaching physical theories that explain the behavior of matter and the nature of the universe. Deeper understanding of nuclear matter and its interactions will continue to be invaluable to research in energy, nuclear medicine, materials science, and national security. In FY 2008:
- In High Energy Physics (HEP), cuts will result in the loss of existing support for 340 Engineering, Technical, and Administrative positions, 100 permanent PhDs, 10 postdoctoral fellows, and 10 graduate students for a total reduction of 460. Of this total, approximately 100 reductions were planned to take place in FY 2008, with the remaining 360 resulting from appropriations at a level 12 percent below the President's FY 2008 request.
 - In Nuclear Physics, loss of support across the program will result in reductions of 14 to 20 permanent PhDs and postdoctoral fellows; 10 to 12 students; and, approximately 30 operations, support, and other personnel.

The impacts listed above will likely have the following geographic distribution:

- **Argonne National Laboratory (ANL), Argonne, Illinois**
 - The Intense Pulsed Neutron Source at ANL will be closed immediately and permanently, resulting in approximately 50 layoffs.
 - The Building Electrical Services Upgrade project at ANL will be cancelled.
- **Brookhaven National Laboratory (BNL), Upton, New York**

- Construction funding for the National Synchrotron Light Source-II at BNL was cut by 33 percent, which will cause significant project delays and escalate total project cost, possibly exacerbating budget shortfalls in future years.
- Relativistic Heavy Ion Collider (RHIC) operations at BNL will be reduced from a planned 30 weeks to 19 weeks.
- Funding for the PHENIX Forward Vertex Detector and the PHENIX Nose Cone Calorimeter at RHIC will be reduced and the schedules will be delayed by one year.
- **Fermi National Accelerator Laboratory (FNAL), Batavia, Illinois**
 - About 200 layoffs of existing science employees are expected at FNAL. Additionally, the laboratory will be forced to institute a “rolling furlough” of two days each month of leave without pay for all remaining FNAL employees.
 - There will be major, indeterminate delays in construction of the NOvA research project at FNAL.
 - The U.S. will lose its leadership role in the global design effort for the next major international HEP project, putting the selection of FNAL as a potential site for the International Linear Collider in jeopardy.
- **Lawrence Berkeley National Laboratory (LBNL), Berkeley, California**
 - Delivery of the Advanced Light Source User Support Building at LBNL will be delayed by more than one year because funding was reduced by 70 percent below the President’s FY 2008 Request.
 - Funding for the Gamma Ray Energy Tracking In-Beam Nuclear Array Major Item(s) of Equipment (MIE) is reduced in FY 2008, causing increases in project risks and delays in schedule; impacts to project cost are being evaluated.
- **Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee**
 - Basic energy sciences instrument projects for the Spallation Neutron Source at ORNL will be reduced, delaying completions by at least one year.
 - Funding for the joint DOE/NSF neutron Electric Dipole Moment Experiment MIE is reduced in FY 2008, causing increases in project risks and delays in schedule; impacts to project cost are being evaluated.
 - The U.S. ITER Project Office will be reduced to a minimum level. Up to 40 staff may be reassigned.
- **Stanford Linear Accelerator Center (SLAC), Menlo Park, California**
 - There will be about 225 layoffs and negotiated early retirements of existing employees at SLAC (100 were planned to take place in FY 2008 and 125 resulting from appropriations made at a level below the President’s FY 2008 request).
 - B-factory research operations at SLAC will be reduced by 75 percent compared to the 5,720 hours planned in the FY 2008 request.
 - Instrument projects for the Linac Coherent Light Source Ultrafast Science at SLAC were reduced 40 percent below FY 2008 President’s Request, delaying completions by at least one year.

- **Thomas Jefferson National Accelerator Facility (TJNAF), Newport News, Virginia**
 - Operations of the Continuous Electron Beam Accelerator Facility at TJNAF will be reduced from a planned 34 weeks to 24 weeks.

As described above, most of the Department's basic research portfolio will not receive the funding we believe that it needs in FY 2008. Nevertheless, I want to thank Congress for its strong support for Biological and Environmental Research and Advanced Scientific Computing Research at DOE. I look forward to working with Congress to ensure that we keep America competitive through strong support for science that will provide transformational solutions for our most pressing national needs.

If you need additional information, please contact me or Ms. Lisa E. Epifani, Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,

A handwritten signature in black ink, appearing to read "Sam", with a stylized, flowing script.

Samuel W. Bodman

Enclosure

cc: The Honorable Pete V. Domenici
Ranking Member

Estimated Major Layoffs and Hires at National Laboratories and Universities
Result of FY 2008 Appropriations for the Department of Energy's Office of Science

	Anticipated Increases	Potential Reassignment	Planned Layoffs	Estimated Layoffs as a Result of FY 2008 Appropriations					
	<u>Across Labs & Universities</u>	<u>ORNL</u>	<u>SLAC</u>	<u>SLAC</u>	<u>Fermi</u>	<u>ANL</u>	<u>Other Labs & Universities</u>	<u>Total</u>	<u>Grand Total</u>
Advanced Scientific Computing Research	185	-	-	-	-	-	-	-	185
Biological & Environmental Research	210	-	-	-	-	-	-	-	210
Basic Energy Sciences	-	-	-	-	-	-50	-60	-110	-110
High Energy Physics	-	-	-100	-125	-200	-	-35	-360	-460
Nuclear Physics	-	-	-	-	-	-	-55	-55	-55
Fusion Energy	6	[40]	-	-	-	-	-	-	6
Total	401	[40]	-100	-125	-200	-50	-150	-525	-224

The personnel working in the ITER Project Office at Oak Ridge may have to be reassigned due to the reduced allowable expenditures in the ITER account. The chart represents the 40 people as a non-add because there is a potential of up to 40 people this may affect.

The information contained in this table has been updated slightly; and therefore, differs from that contained in the FY 2009 President's Budget Justification.